

# THE

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# COLONIAL NEWSLETTER

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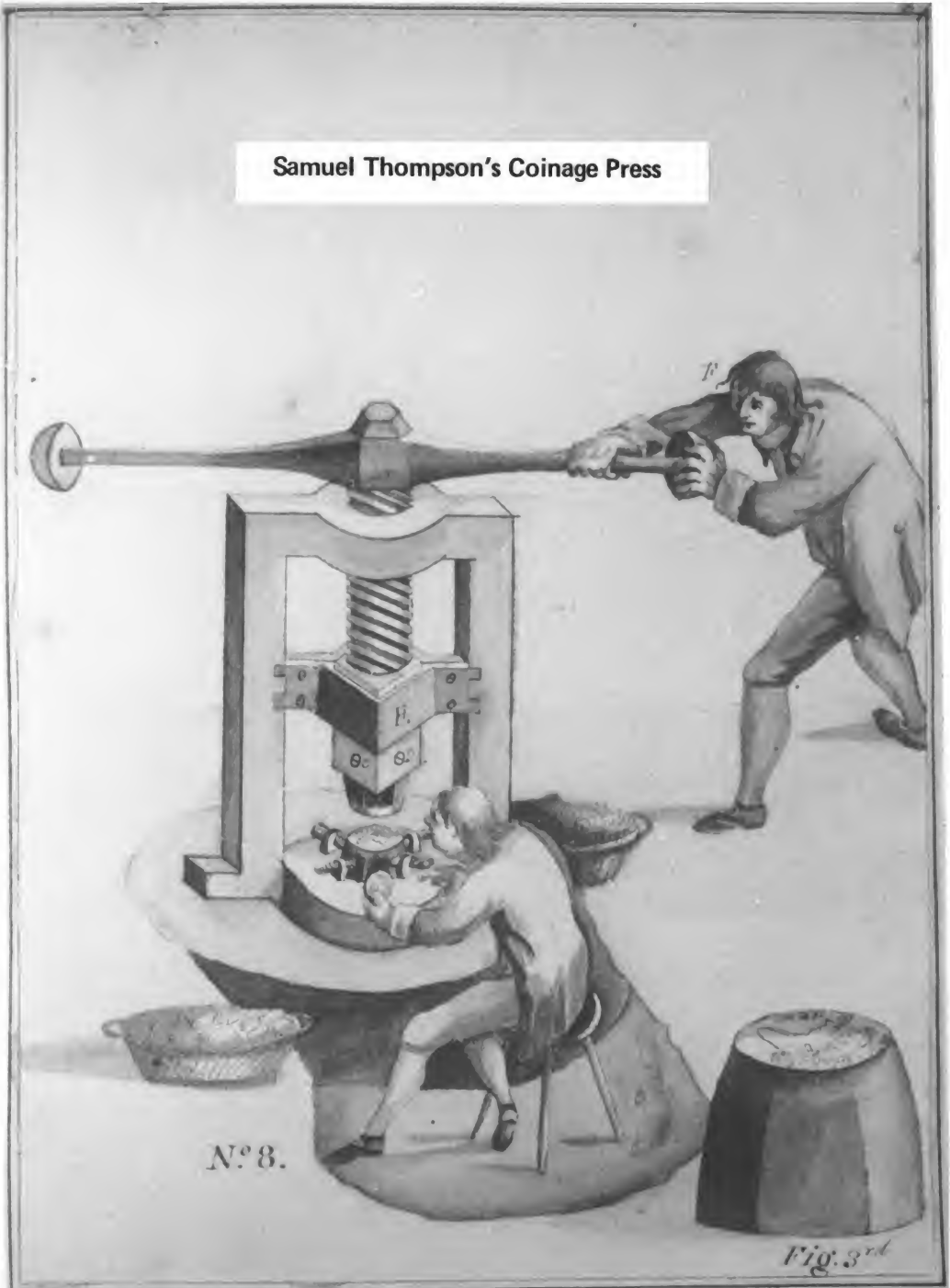
J.C.Spilman, Editor

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Samuel Thompson's Coinage Press



## **An Overview of Early American Coinage Technology**

**by J. C. Spilman**

### ● **Introduction**

A goal of The Colonial Newsletter Foundation, expressed in 1974 when the Foundation was incorporated, is to establish an authentic restoration of a complete early American mint (of the 1787 era) to include facilities for smelting, refining, casting, rolling and cutting copper and silver, and the tooling and machines for die sinking and striking of coin of the sort produced in America during the late 18th century. We anticipated that a site for this restoration could be made in the early 1980's.

Today, eight years later, it is clear that there is nothing to "restore" and that the best that can be done is a "reconstruction", and even that will be quite difficult because we do not know enough about the tools, techniques and facilities to make accurate judgements on many details. This does not imply that we will drop our goal of establishing an authentic early American mint, only that considerably more time and research is required than originally anticipated.

CNL Patrons have contributed many ideas and suggestions over these eight years. This has included information regarding the original mint sites, documents describing methods of coinage and tooling details, and questions and answers regarding more obscure aspects of the extant coinage. There is, however, one discouraging aspect of all this and that is that not one original artifact has been uncovered from the era of early American coinages (generally considered to be the time span from the mid-1600's to the year 1793 when the first United States mint was established. And further, not one document describing American technology of the period. No dies, no tools, no hubs, no documents. All that seems to have survived are the coins themselves!

In spite of these disappointments substantial progress has been made toward definition of the mid-1700's technology used for coinage production in America. Most of the progress has, by necessity, been extrapolated from contemporary documents which originated outside America but which certainly applies to American industry of the period, such as it was under British domination with the prohibition of American manufacturing.

We must assume that the majority of machines and tools had been imported from England or France and that many of the American craftsmen were trained in their home countries and then imported their skills to America. This statement, however, does not overlook the outstanding skills of Abel Buell, the father of the Fugio and Connecticut coinages, who was a native born American.

In this overview we shall attempt to describe many of the facts that have come to light since we established the goal of an early American mint. Some will be new to our Patrons and some will not; however, we hope to tie together all of the few facts and many speculations that point toward our objective. We hope these discussions will lead to the discovery of additional materials from which we can establish criteria for the accurate design of an early American mint.

Our discussions are organized, more or less, according to the type of device or technology involved and we hope to constrain the text to the specifics of the technology or process. There are, however, many sidelights of considerable interest and worthy of note, so please bear with us as we stray from the major topic from time to time. We begin with one of the major tools of the coiner -- his coinage press.

### ● The Coinage Press

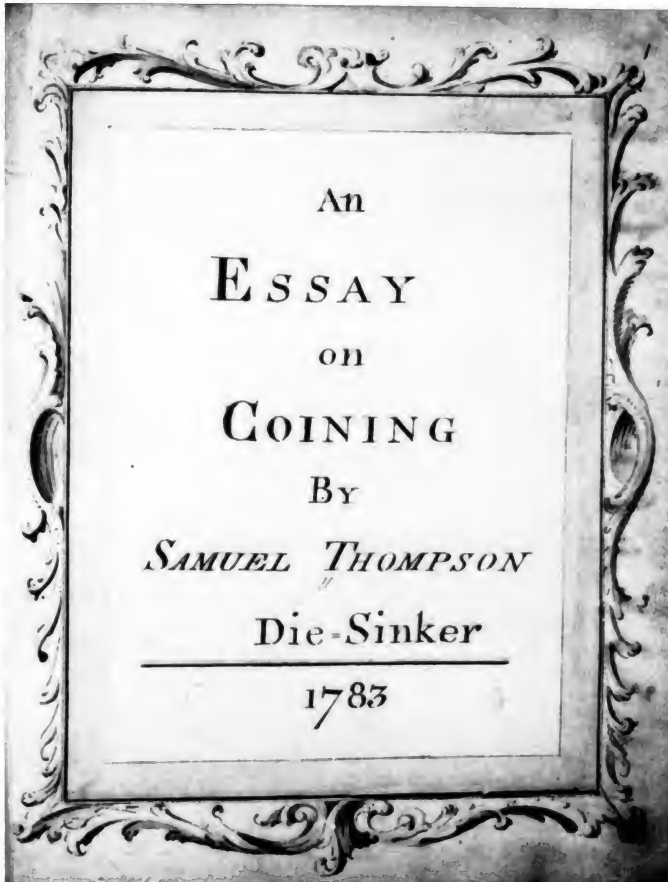
There are many references to be found throughout the literature on early American numismatics stating that the coinages were produced on a device known as a screw press. (The time period 1785 through 1788). A few references indicate the use of some sort of "high-speed" press capable of outperforming the screw press by a significant amount, but what that device might be is not known today.<sup>1</sup> It is almost a universal conclusion that the screw press was the machine used by American coiners during the period of major interest, 1785-1788.

There are traces in the literature of two early American coinage presses that might be extant today. One is the Machin's Mills coinage press reportedly carried as part ballast in the sloop Newburgh.<sup>2</sup> The second is reported by Frank H. Stewart<sup>3</sup> where on June 3, 1794 the United States Mint purchased for the sum of \$47.44 from Hanna Ogden a coinage press which is believed by Damon G. Douglas<sup>4</sup> to have been the screw press used by Matthias Ogden in Elizabeth-Town, New Jersey to coin New Jersey Coppers. We have no idea whether either of these presses are extant today.

The earliest known sketch of a coinage screw press was made by Sienese artist-architect Baldassare Peruzzi (1481-1531) ca. 1530. This drawing supports the theory that the screw press was well diffused in Italy before it became common in Germany and France ca. 1550. It should be noted that the main screw of Peruzzi's press had a left-hand thread!<sup>5</sup>

Our frontispiece for this issue of CNL illustrates an English screw press ca. 1783, precisely at our time span of interest. This illustration is from a remarkable and unique manuscript located today in the Library of the American Numismatic Society in New York City. It is a holographic manuscript -- entirely handwritten with handdrawn sketches -- by Samuel Thompson, Die Sinker. The frontispiece of Thompson's manuscript is shown on the next page.

1. See page 776 for notes.



Frontispiece -- An Essay on Coining

There are no accession records to indicate how or when the Library obtained the manuscript, but it has been in the stacks for many years. The name Matthew Bredan of Dublin (Ireland) appears on the fly leaf and it can be inferred from the text that the author, Samuel Thompson, was a resident of Dublin, Ireland. There are several references to Dublin, and to London, and the purpose of the document might well have been to serve as a technical supporting document to a coinage proposal of some sort. Several of the illustrations from this manuscript have been published previously<sup>6</sup> and so are not new to numismatists; what is new is the opportunity for easy side-by-side comparison with similar illustrations from other sources.

The really remarkable aspect of the Thompson manuscript is that it is an elementary time-and-motion-study detailing the necessary tooling, technology, labor and costs necessary to produce Gold, Silver and Copper coins. This may come as a bit of a shock to modern day industrial engineers who generally believe that time-and-motion-study is a 20th century concept! Utilizing the screw press shown on our frontispiece and the associated tools and techniques, Thompson determines that "Three men in six days can make four thousand halfpence or farthings." It appears that one of Thompson's days was a twelve

hour workturn. Further, Thompson calculates that the difference between the value of the copper struck and the halfpence after coinage is £ 3:5:9, and this, of course, must cover the labor costs and other expenses.

Following these calculations, Thompson returns to a discussion of the coinage press, on page 55 of the manuscript, and we encounter a frustrating error of omission! The illustration on our frontispiece is sketch No. 8 in the manuscript; today, we call this coinage machine a screw press, but in Thompson's day it was known as a Fly. Apparently there was an earlier type machine used for stamping the coinage but Thompson fails to say what it was and there is very little in the way of clues as to its identity. Evidently Thompson intended to describe the device in detail but simply failed to do so!

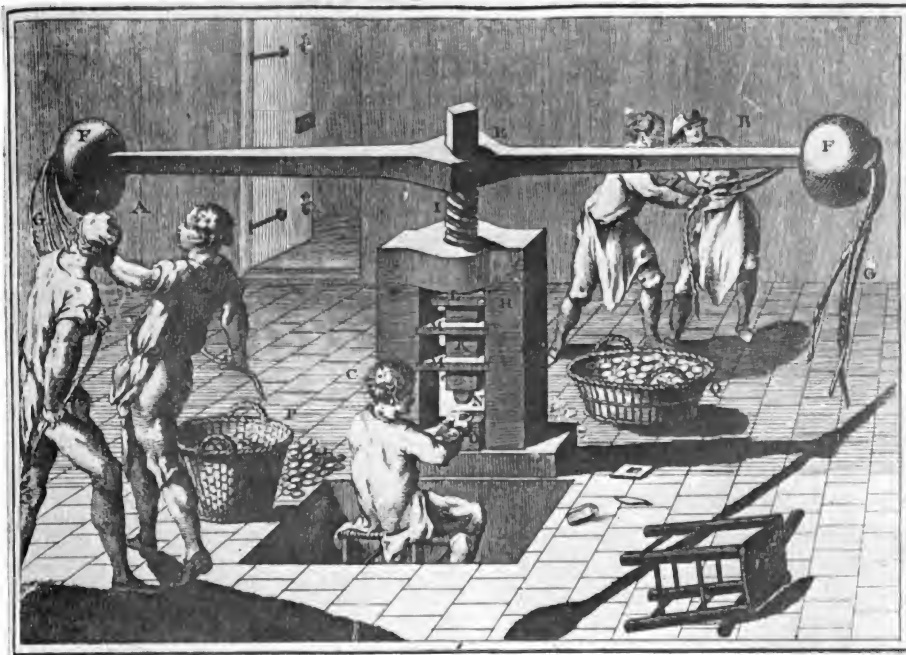
His text states --- "Formerly all coin were struck with a Machine of this kind, but the Fly No. 8 being found more Correct in the stroke, this other machine was laid aside, but they have brought this machine to such perfection that I think it would be sufficiently correct for coining of Copper. The advantage this Machine has over the Fly No. 8, is, it requires but one man to work it, therefore half the Expence of Labour is saved by it, also the Stroke is much quicker and one man can do double with this machine, that the two men can do with the Fly. I have seen twenty impressions taken off with this machine, in a minute while looking at my watch, which is more than possible can be done with a fly, but this great Expectation would be wrong to make a Calculation on as no man possible could continue to work at this rate for any length of time -- This machine costs about Twenty Guineas -- "

We can speculate that this unknown machine may have been some form of hammer or drop press. Perhaps one of our Patrons can fill this gap. It has always been ye Editor's impression that the hammered coinages were followed directly by coinages produced by mill and screw.

Thompson's Fly No.8 exhibits a "fast" multiple left hand thread to which is attached a weighted arm. The screw is mounted in a heavy frame and on the lower end connects with a movable yoke, or guide, with a mounting device for the upper die. The lower die is secured to a heavy base between four thumbscrews. The entire press is floor mounted and a pit has been excavated for the pressman.

For comparison purposes, we have selected a number of illustrations of screw presses of the same general time period as our period of interest. About the only real differences in any of these machines are in minor details of construction, but all are large, heavy devices requiring two or more men for operation.

The first is one of the Lucotte plates from L'Encyclopedie of Denis Diderot, ca. 1770. This press is quite similar to Thompson's Fly No.8 except that it is larger and the fly weights are equipped with tongs and the pressman is assisted by four helpers swinging the arms, and - again - we see a left hand screw. We refer to this plate as a Lucotte plate because in Diderot's original publication the plate is signed in the lower left just below the border "Lucotte Del" and in the lower right "Bernard Fecit". This indicates that the plate was engraved (fecit) by Bernard from drawings (delineavit) by Lucott, presumably under the direction of Diderot. This is true of all plates in the Monnoyage section of L'Encyclopedie.



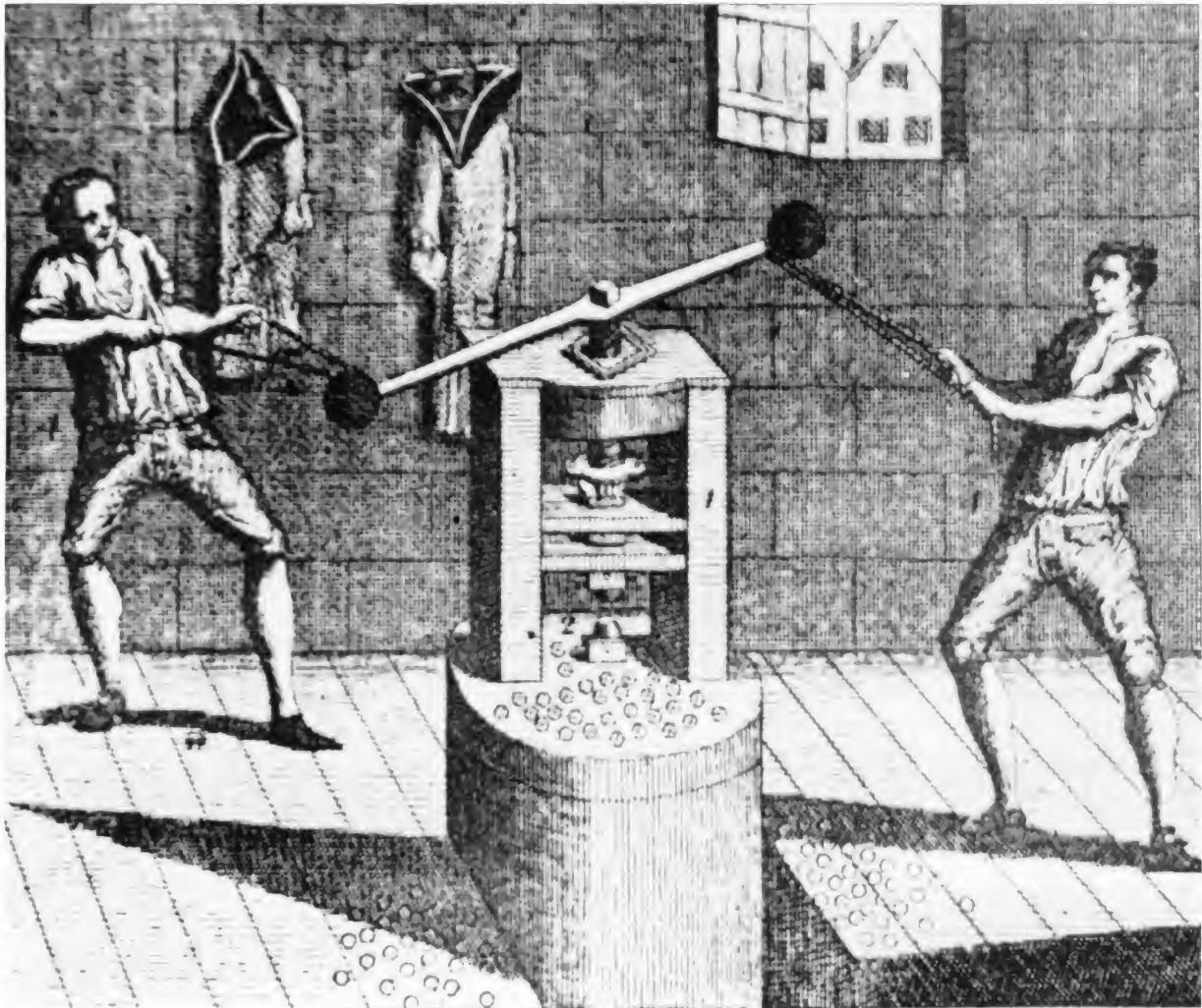
Diderot Coinage Press

Our illustration is only the top half of this Lucotte plate. The lower half shows each of the major component parts of the press, drawn separately, in sufficient detail so that we can establish with reasonable certainty the basic design features of the key components. To the right is the main frame of the press and we notice at once that it extends well below the floor level of the press room.



Main Frame

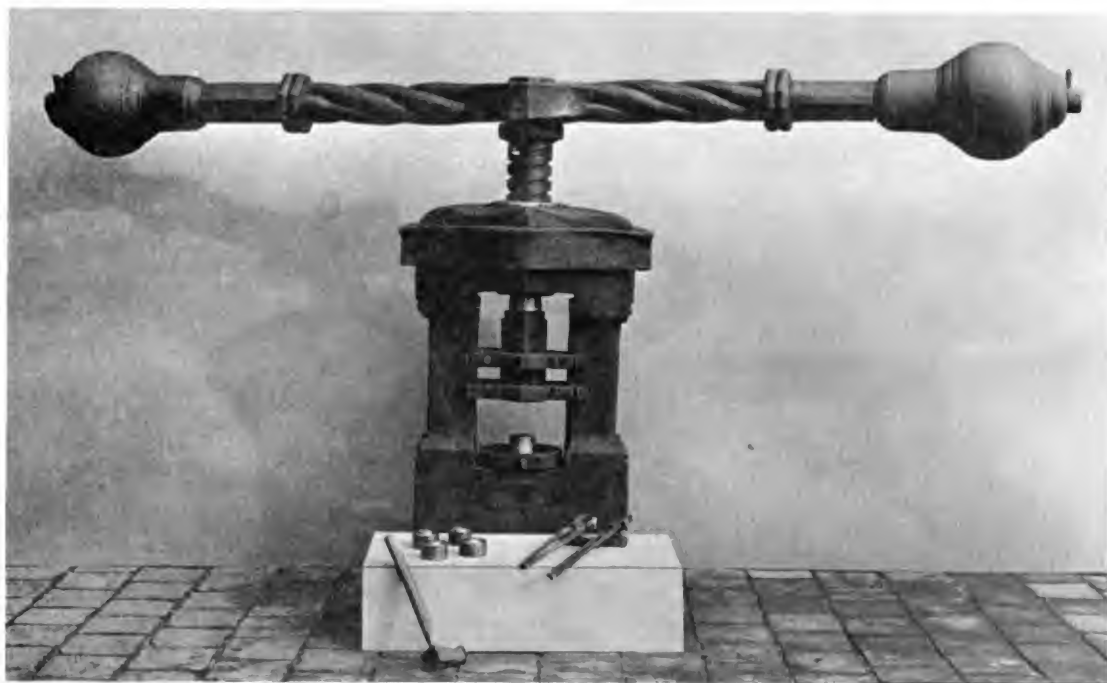
Next is a partial illustration that first appeared on page 66 of *Universal Magazine* (London) in August 1750. Here two men operate the Fly but there is no pressman in the pit. He was probably omitted so as not to block the view of the press. Here we see a right hand screw on the press. We have cut off the right hand portion of the illustration which contained an insert showing an edge mill and two enlarged dies. This *Universal Magazine* illustration, some twenty years later, in 1770 – was broken into three separate figures and published in the first edition of *Encyclopedia Britannica* (Edinburgh, 1768-1771). <sup>7</sup>



Universal Magazine Coinage Press



The next illustration is a photograph of an extant screw press located in the Germanisches National Museum in Nurnberg. This ornate press features a "slow" square cross section "Acme Thread" and could require as much as two complete rotations of the arms to close the dies on a planchet. The "fast" threads on Thompson's press, and the others illustrated, would require only about a quarter turn, or so. The date of manufacture of this Nurnberg press is uncertain, but it appears to be of relatively modern manufacture.



**Nurnberg Coinage Press**

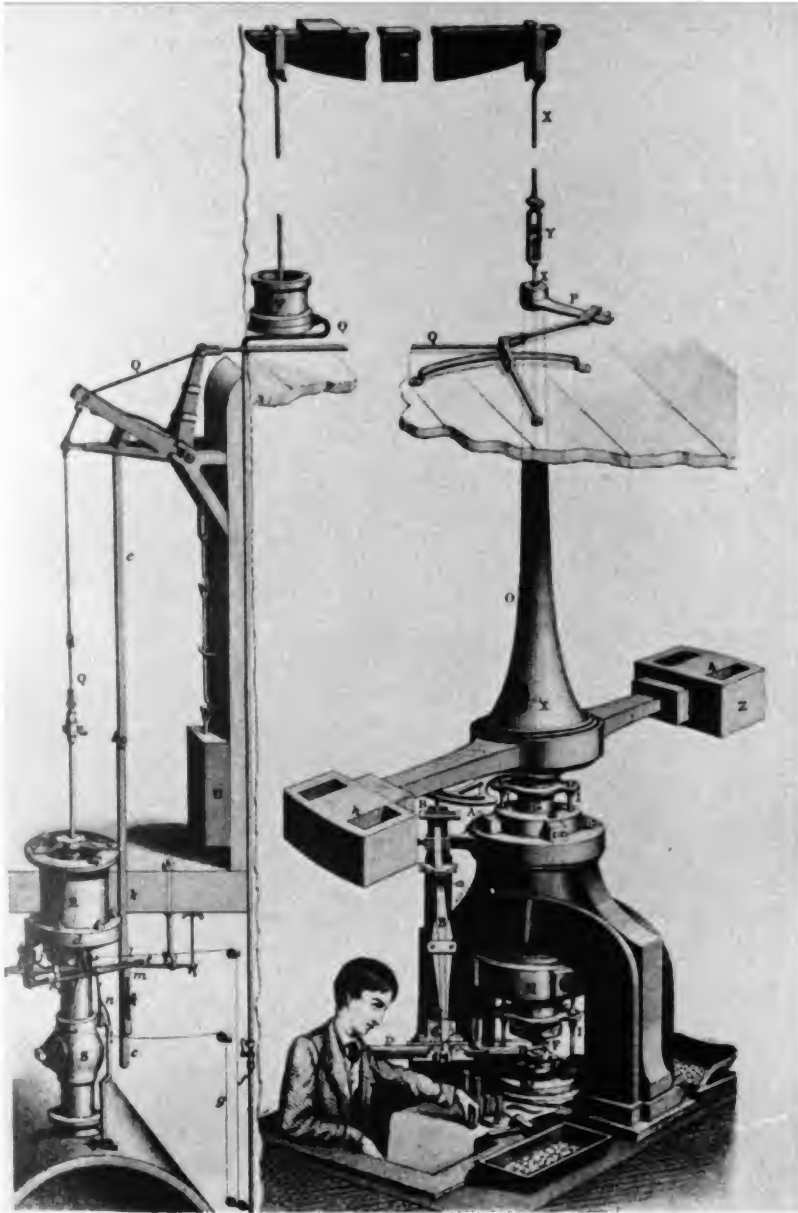
Each of the fly weights is held in place with a small pin which appears to be removable. If this is the case, then it would be a relatively simple matter to interchange the fly weights with smaller or larger weights in order to match the capacity of the press to different size dies and coinage metals.

Unfortunately there is no reference scale in this photograph. If we assume that the handle of the hammer is between twelve and eighteen inches in length, then we can scale the overall height of the press to be approximately four to five feet and the main screw to be five or six inches in diameter.

Our thanks to Mr. Robert H. Bartels for obtaining this photograph from the Germanisches National Museum.



When Matthew Boulton and James Watt (of the Soho mint in England) combined their talents and produced the first steam operated coinage press it was basically a steam driven Fly. Thus, the screw press - previously half man and half machine - became fully machine and the press operator became an observer with duties of hand loading quantities of planchets into an automatic feeder. This illustration, from Ansell's "Treatise on Coinage", 1862, shows the Boulton & Watt steam driven Fly. The exact date of this particular press is uncertain. Whether driven by steam or manpower various improvements on the basic Fly, such as the automatic planchet feeder, had come earlier and were in use on presses at the first U.S. mint and on Abel Buell's presses used for the Fugio and Connecticut coinages.



Boulton Steam Modified Screw Press

Here is a sketch of unknown origin that depicts the interior of the Dresden Mint, ca. 1784. Both press helpers stand at the same arm of the Fly facing each other, a very inappropriate juxtaposition for swinging the arms! The two workers at the left are, we believe, operating a planchet cutter or die sinking machine.



**Dresden Coinage Press**

On the next page is a line drawing of uncertain origin made from a color painting which depicts the interior of the Tower Mint in London in the year 1800 just prior to the removal of the mint facilities from the Tower and the conversion to steam driven presses. The color version of this scene has appeared in a number of different publications, but this line drawing is new to us. It demonstrates the problems of translating a scene from a photograph, a painting or real life into a sketch or engraving. In the original painting the two presses located at the right side of the figure are identical to those in the foreground, but in the line drawing they have been transformed into something that looks like a four arm capstan. Additional trays of planchets have been added and the press in the foreground - not in operation - had a number of tools lying around indicating that the press was in the process of repair or maintenance. Those tools have vanished in this rendition.<sup>8</sup>

One of the most interesting features of this scene is the fact the outermost press helpers can be seen to have a floor wedge against which to brace a foot as they pull on the tongs. This indicates that they maintain their same relative positions as they operate the press and therefore permit the weights to swing toward and away from them, making approximately a quarter turn, to raise and lower the dies.



**Tower Mint Coinage Presses**

In this overview we have selected illustrations that appear to represent the type of machine used to stamp the American coinages of the 1785-1788 era. All are large and heavy devices capable of generating sufficient pressure to stamp a halfpence size copper coin in a single blow. They give a very good idea of what our basic "reconstructed" screw press for the CNL early American mint should look like, and how it should be designed and constructed. We believe it should be sized so as to require three to five men for proper operation.

We plan to continue our overview in the next issue of CNL. As always, comments are invited from our Patrons.

**NOTES to An Overview of Early American Coinage Technology**

1. See CNL pages 353-355 for discussion of RF-33, Abel Buell's "High Speed Coinage Press."
2. See CNL page 400; RF-50 What became of the Sloop "Newburgh" which carried the Machin's Mills coining press as ballast?
3. Stewart, Frank H. "History of the First United States Mint", 1924. Quarterman reprint, 1974, page 175, Entry for June 3, 1794, Hanna Ogden, for a coining press \$47.44.
4. Douglas, Damon G. "The Coining Press of the New Jersey Coppers", The NUMISMATIST, April 1943 pages 287-288. In this paper presented before the Jersey City Coin Club Mr. Douglas develops a convincing case showing that the U.S.Mint purchase was in fact the coinage press used by Matthias Ogden to coin New Jersey coppers.
5. Adams, Nicholas. "New Information About the Screw Press as a Device for Minting Coins: Bramante, Cellini and Baldassare Peruzzi". The American Numismatic Society Museum Notes No. 23; New York, 1978. Pages 201-206 and Plate 38. It is suggested that Peruzzi, architect to the Republic of Siena, remembering the success of Bramante in Rome with his coinage press and impressed with its efficiency, made this sketch with the thought of introducing the screw press into the Sienese mint.
6. Taxay, Don. "The U.S.Mint and Coinage. An Illustrated History From 1776 to the Present." Arco Publishing Co., New York, 1966. See pages 79 - 99. Chapter 7 -- The First Mint and its Operations.
7. See CNL pages 189-192. Three Figures illustrating a discussion of coinage in the first edition of Encyclopedia Britannica, Edinburgh, 1768-1771, are derived from the Universal Magazine illustration. The coinage press itself has been copied and recopied many times in various publications; each illustration with minor differences from earlier variations. Some are reversed, such as that used to illustrate the cover of a 1959 Hartford Numismatic Society pamphlet "Auctori Connec and Other Emissions."
8. If one of our Patrons can identify the original source of the illustrations for the Dresden Coinage Press, page 774, or the Tower Mint Coinage Presses, page 775, we will greatly appreciate receiving the information. We would like to obtain an exact copy of the originals for the CNL files.

**TRIAL AT LAW: ALBION COX vs. THOMAS GOADSBY; Filed 19 January 1788.  
from Raymond H. Williamson; Lynchburg, Virginia (TN-96A)**

Another year has rolled around, and another visit made to the New Jersey Archives in hot pursuit of a personal eighteenth-century genealogical enigma. Again I tripped over a primary source item in the numismatic history of New Jersey. Again it was the Chancery Court Case of Cox vs. Goadsby. The actual court record of this case, beginning January 29, 1788, was transcribed for the December 1980 issue of CNL, page 742. The document seen by the writer this year was Albion Cox's Petition to the Chancery Court, filed ten days earlier. Albion Cox and Thomas Goadsby were New Jersey coiners of coppers, and Cox was five years later the pioneer Assayer of the first United States Mint. He made his petition to this court of equity in order to get out of the Essex County "goal" (jail) where he had been imprisoned for debt. Thomas Goadsby was responsible for this incarceration -- due to his business prudence or to his vindictiveness, depending on the point of view.

This year at Trenton, there wasn't time to copy the entire Cox vs. Goadsby countersuit verbatim, as I did for the Court Record published last December. Perhaps it is numismatic trivia anyway, but it certainly is primary source material. Some future searcher undoubtedly will transcribe the entire case -- which he will find at the Archives, New Jersey State Library, Trenton; Record Group: Judiciary; Sub Group: Chancery Court; Series: Cases 1743-1824; Box No. 18. It is one of six or eight loose, soiled parchment rolls (sheepskin) in this box, and measures about 30 inches by 30 inches. The faded manuscript lines span the entire 30 inches. When the reader comes to the end of a 30-inch line, it is quite a chore to determine which line is next, especially since the parchment when unfolded refuses to lie flat. And there are fifty such LONG lines.

In this document, the petitioner (Albion Cox) identifies himself repeatedly as "your orator," a part of the court protocol of that day. This New Jersey Court of Chancery was presided over by the Governor of the State as Chancellor. There follow a few excerpts plus a partial paraphrasing of a few of the long statements -- not nearly the whole story, but favorable enough (hopefully) to stimulate a complete future follow-up. The soiled parchment will still be in Box No. 18.

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"To his Excellency William Livingston, Esquire, Captain General, Governor and Commander in Chief in and over the state of New Jersey and territories thereunto belonging, and Chancellor of the same.

"In Chancery respectfully complaining, sheweth unto your Excellency:

"Your Orator, Albion Cox of Elizabeth town, County of Essex and State of New Jersey;

"That your Orator, in partnership with Thomas Goadsby of the same place and others in certain Works for the manufacturing of copper into plates of copper pence and other considerable dealings with said Thomas Goadsby separate from said partnership, your Orator was pressed by the said Thomas Goadsby to come to a partial settlement of the dealings between them Independent of said Partnership; but your Orator, supposing that if a fair and candid settlement of all the several dealings between them were had including the said Partnership and monies received by said Thomas Goadsby that your Orator would not owe anything to said Thomas Goadsby, refused the same untill several others of the creditors of your Orator pressing your Orator for their just Debts, the said Thomas Goadsby by taking advantage of . . . . " [The transcript of this paragraph includes only the first four of fifty thirty-inch-long lines of handwriting].

Cox later spoke of ". . . Matthias Ogden, in whom your Orator put the greatest Confidence . . ." Cox also had an admitted debt to Samuel Atlee of £1200 York money (8 shillings to the Mexican dollar); this would be \$3000, a tremendous sum in 1788. Continuing at long-line 35 of the parchment manuscript:

". . . the said Thomas (Goadsby) hath suffered a Writ thereon against your Orator (Cox) to hold him in Bail in said sum, by which he is confined to goal (jail) . . . . "

Also, ". . . in and for the County of Essex, (there) hath issued a fieri facias (Court Order) against the goods and chattels of your Orator directed to the Sheriff of the County of Essex by virtue whereof Caleb Camp, Esquire, Sheriff of said County, hath levied on and taken possession of all and singular your Orator's Household furniture and other Personal Estate and now threatens to sell the same in direct violation of the agreement with your Orator as aforesaid to his great distress and impoverishment . . . he and his family would be left to suffer for want thro' a severe winter, . . . ."

Cox cited a coinage agreement of 18 October 1787, which needs further research, since it follows the removal of partner Walter Mould to Morristown (April 1787, per Damon G. Doublas, CNL page 228, July 1968), and also follows the July 7 1787 Atlee-Cox obligation of £1294/15/-- to Goadsby (CNL page 745, December 1980).

It is apparent that Cox thought that substantial profits would result from the copper-coining partnership, which profits could be used to offset personal debts to the partners and others, and that these profits had utterly

failed to materialize. Their cost estimates had been very optimistic. Cox was appealing to a Court of Equity which could operate in cases where the severity of Common Law might be shown to be not applicable. As he sat in jail, he described himself as "remediless" under the Common Law.

"Filed 19th JanY 1788 Matthias Williamson, Jr. of Council with the Complain<sup>t</sup> (Plaintiff)."

This formal complaint of Albion Cox vs. Thomas Goadsby was dismissed by the Chancellor June 3, 1790 (CML page 745, December 1980).

Small wonder Albion Cox grabbed a sailboat for England at the first opportunity! And I learned from this 200-year-old parchment that Cox had a family in New Jersey. Wonder what became of them when Albion decamped and returned to England? And with all the internal warfare among the New Jersey copper coiners, and their various geographical moves, perhaps we may better understand the great diversity in styles and types.

*Ray Williamson*

Raymond H. Williamson

